

REMARKS

In the Office Action dated September 16, 2005, the Examiner rejected claim 1 as anticipated by Ciccarelli (US Patent 6,075,237) and rejected claims 1-26 under 35 USC 103 as unpatentable over Prabhu (US Patent 6,873,024) and Miwa (US Publication 2005/0030505). The applicants have not amended the claims. Claims 1-26 remain at issue.

The Art Rejection

The Examiner rejected claim 1 as anticipated by Ciccarelli. The Applicants disagree. Ciccarelli does not anticipate claim 1.

Ciccarelli is directed to a package for a semiconductor imaging chip. The package 10 includes, as best illustrated in Figures 3, 4a and 4b, an image sensor 12 positioned on a conductive pad 13 within a cavity 18 in the package. A glass plate 20 is placed on the package. The glass plate 20 is silk screened to define an opaque light shield region 22 and an aperture 28. With regard to the fabrication of the glass plate 20, Ciccarelli teaches the following in Column 2, lines 12-18:

Preferably, an opaque epoxy is silk-screened onto the cover glass 20 to form light shield 22. The silk screen has aperture 28 within the pattern used to form light shield 22. The epoxy (or any opaque material such as paint, glue, or a thin film deposition such as a metal or an oxide) is used to fashion light shield 22 is patterned to the appropriate size, which is predetermined for a particular sensor, to form an integral light shield 22 on cover glass 20.

Claim 1 has a number of features that are not taught in Ciccarelli. These features include:

(i) a lid that is fabricated having both a transparent region and support regions. In Ciccarelli, the glass cover 20 does not have any support regions. Instead, the glass 20 is flat and is designed to be sealed to the vertical support walls of the package 10 of Ciccarelli,

(ii) applying and patterning a photosensitive layer (i.e., optically transparent) on the lid to create the transparent region and the support regions. Ciccarelli on the other hand applies an "opaque" material such as paint, glue, or a thin film metal or oxide onto the lid 20,

(iii) mounting the lid directly onto the die. In contrast with Ciccarelli, the image sensor 12 is mounted within a recess of the package and the glass cover 20 is mounted onto the vertical walls of the package.

For the above reasons, claim 1 is not anticipated by Ciccarelli.

The Examiner also rejected the claims based on the combination of Prabhu and Mira. The applicants disagree. The examiner has failed to demonstrate a prima facie case of obviousness.

Prabhu is directed to the wafer level packaging of imaging die. In Prabhu, a wafer shaped transparent template 20 as illustrated in Figure 2 is created. The template 20 includes a plurality of die cover regions 22 held together by tie bars 24. Recess regions 26 are defined as the space between the regions 22 and the tie bars 24. See column 3, lines 32-44. Once the template is made, it is aligned and laminated onto a semiconductor wafer. See Figure 3. In one embodiment, a bead of resin is deposited around the periphery of the imaging circuitry 16 on the die to form a spacing structure 30. See column 3, lines 64-67 and column 4, lines 1-5. In an alternative embodiment, a spacing structure 32 is formed by dispensing a layer of clear epoxy over the imaging circuitry 16 on the die. See column 4, lines 17-21. With either embodiment, the spacing structure is formed on the surface of the die. Prabhu therefore does not teach the fabrication of a lid with support regions having a predetermined height.

Mira discloses an exposure machine for exposing semiconductor wafers and substrates.

In formulating the rejection, the examiner states that it would be obvious to pattern the template of Prabhu using the Mira exposure machine to form the transparent and support regions of the lid of the present invention. The applicants strongly disagree. There is absolutely no teaching in either reference, either alone or in combination, to form a lid with an integral support regions. On the contrary, Prabhu actually teaches away from the invention of fabricating a transparent lid with integral support regions. Prabhu specifically teaches that the spacing structures 30 or 32 are formed by dispensing a material onto the dice of the wafer. Mira describes a machine used to expose a substrate. Mira discloses absolutely nothing about patterning a lid having a transparent region and support regions. Accordingly,

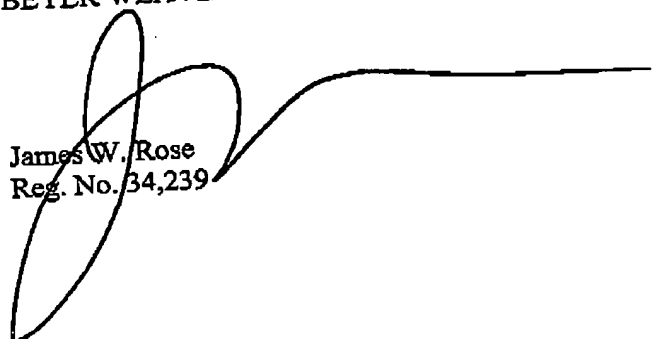
even if it were proper to combine the references, the proposed combination still would not teach the present invention.

It is clear that the examiner has used the teaching of the present invention as a "road map" to find references that each teach certain features of the claimed invention and then combined the references in hindsight. Not only is this an improper application of the obviousness standard, but the proposed combination still fails to meet the present invention as claimed. Again, neither reference, either alone or in combination, discloses fabricating a lid having a transparent region and support regions and which is directly mounted over the imaging circuitry of a semiconductor die.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

James W. Rose
Reg. No. 34,239



P.O. Box 70250
Oakland, CA 94612-0250
(650) 961-8300